

Claims

1. Fluid separating apparatus for separating liquids and solids from a multicomponent fluid having the following features:
 - a) an upwardly sloping channel (12) with a closed lower end and an outlet (19) comprises an axially extending conveyor screw (14) arranged in the interior,
 - b) a filter tank (22) is arranged above channel (12) and communicates therewith,
 - c) at the upper edge approximately in the center of the filter tank (22) a separation material intake (32) is provided for the multicomponent fluid to be separated,
characterized in that:
 - d) a rotary filter unit (34, 70, 92) which is partially submerged in the fluid contained in the filter tank (22) is arranged at the free end of the filter tank (22).
2. Fluid separating apparatus as claimed in Claim 1, characterized in that the channel (12) is arranged at a 15° to 30° , preferably about 20° angle to the horizontal.
3. Fluid separating apparatus as claimed in Claim 1, characterized in that the cross section of the filter tank (22) tapers in downward direction and preferably has a roughly triangular shape as seen in a vertical cross section.
4. Fluid separating apparatus as claimed in Claim 1, characterized in that, along the upper edge (24), the width of the filter tank (22) as viewed in longitudinal direction increases in a first section (26), remains about constant in middle section (28) in which the separation material intake (32) is located, and tapers to the width of the channel (12) in a third section (30).

5. Fluid separating apparatus as claimed in Claim 1, characterized in that a plurality of parallel baffles (60) spaced apart from one another and arranged in groups inside the filter tank (22) extends from one sidewall to the other and is inclined at a 40° – 70° angle to the normal.
6. Fluid separating apparatus as claimed in Claim 5, characterized in that the upper edges of the baffles (60) are below the liquid surface level (58) and their lower edges are above the conveyor screw (14).
7. Fluid separating apparatus as claimed in Claim 5, characterized in that the baffles (60) are essentially provided over the entire filter tank (22), and that a first group of baffles (60a) between the separation material intake (32) and the one axial end of the filter tank (22) is inclined in one direction, and a second group of baffles (60b) is inclined in the opposite direction.
8. Fluid separating apparatus as claimed in Claim 1, characterized in that near the separation material intake (32) opposite the rotary filter unit (34) a deflector baffle (36) is provided which projects downwardly from the upper container rim to inhibit fluid flow from the separation material intake (32) directly to the rotary filter unit (34, 70, 92).
9. Fluid separating apparatus as claimed in Claim 8, characterized in that the deflector baffle (36) is approximately L-shaped and its angled section is directed away from the rotary filter unit (34, 70, 92).
10. Fluid separating apparatus as claimed in Claim 1, characterized in that a gas injection unit (62) is arranged in the filter tank (22).

11. Fluid separating apparatus as claimed in Claim 10, characterized in that the gas injection unit (62) has a plurality of gas injection apertures, which are provided above the conveyor screw (14) along the sidewalls of the filter tank (22).
12. Fluid separating apparatus as claimed in Claim 10, characterized in that the gas injection unit (62) has at least three injection lines (68) which are provided with spaced-apart injection nozzles and together with a transversely extending supply line (66) form an approximately W-shaped structure, wherein the two outer injection lines (68) are arranged parallel to the sidewalls of the filter tank (22) and the central injection line (68) is arranged axially.
13. Fluid separating apparatus as claimed in Claim 1, characterized in that the rotary filter unit is embodied as a disk filter unit (34) with a rotary shaft (42) extending perpendicularly to the longitudinal channel axis and comprising at least one filter disk pair (40), wherein a discharge area (52) communicating with a clear fluid outlet (54) is provided between the filter disks (46) of a filter disk pair (42), and a thick stock discharge (48) is provided on the side of the filter disk pair (42) that is opposite an intake area (50).
14. Fluid separating apparatus as claimed in Claim 13, characterized in that 1 to 10 disk pairs (42), preferably 3 to 5 disk pairs (42) are mounted axially one behind the other.
15. Fluid separating apparatus as claimed in Claim 13, characterized in that the filter disks (46) have a mesh or screen-like construction.
16. Fluid separating apparatus as claimed in Claim 15, characterized in that the filter disks (46) consist of a support frame and wire gauze.

17. Fluid separating apparatus as claimed in Claim 16, characterized in that the wire gauze has two layers and comprises a coarse-meshed support fabric and a fine-meshed filtration fabric.
18. Fluid separating apparatus as claimed in Claim 13, characterized in that the filter disks (46) are sealed along their circumferential edge with respect to a housing (55).
19. Fluid separating apparatus as claimed in Claim 1, characterized in that the rotary filter unit is embodied as a drum filter unit (70) with a rotating screening drum (74) in the interior of which a conveyor spiral (76) is mounted, and the drum interior can be charged with fluid from the filter tank (22) and, further, cleaning nozzles (84) are provided for cleaning the screening drum (74).
20. Fluid separating apparatus as claimed in Claim 19, characterized in that the conveyor spiral (76) has a decreasing pitch in conveying direction.
21. Fluid separating apparatus as claimed in Claim 20, characterized in that the rotary axis of the screening drum (74) is at a slight angle to the horizontal of preferably $5^{\circ} - 20^{\circ}$ and the conveying direction slopes upwardly.
22. Fluid separating apparatus as claimed in Claim 19, characterized in that a collecting channel (86), which guides the cleaning fluid into the filter tank (22) is arranged below the cleaning nozzles (84).
23. Fluid separating apparatus as claimed in Claim 1, characterized in that the rotary filter unit is embodied as a screening drum (92) arranged inside the

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filter tank (22), and that its rotary axis (94) is approximately at the height of the open liquid surface level (58) in the filter tank (22).

24. Fluid separating apparatus as claimed in Claim 23, characterized in that a clear fluid discharge tube (98) is provided concentrically to the rotary axis (94) on at least one side.
25. Fluid separating apparatus as claimed in Claim 23, characterized in that a skimming edge (100) adjoins the lateral surface (104) along the exterior.

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